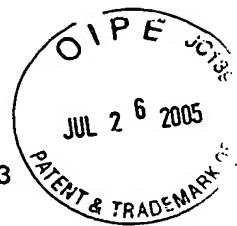


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21-07-05 12:06	From: WINSTON HSU, NO. 41526	8064986673	T-537 P01/16 U-502
 <b>North America Intellectual Property Corporation</b> P.O. BOX 506, Merrifield, VA 22116, U.S.A. Voice Mail: 302-729-1562 FAX: 806-498-6673 e-mail: winstonhsu@nalpo.com Customer No: 27765  Fax To: PHAM, LONG Art Unit: 2814  Tel.: (571) 272-1714 Fax: (571) 273-8300  From: Winston Hsu, Registration No. 41,526 Serial No.: 10/791,709  Attorney Docket No.: UECP0012USA  Subject: Information Disclosure Statement (IDS)  Total Pages: 16 pages (including cover page)  Winston Hsu 2005/07/20  UECP0012USA0_D1_1			

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21-07-10 12:21 8064986673 T-538 P09/16 U-502

**DE 199 45 134 C2**

**Patentschrift**

**BUNDESREPUBLIK  
DEUTSCHLAND**

**DEUTSCHES  
PATENT- UND  
MARKENAMT**

**Alktenzichen: 199 45 134-6-03**  
**Anmelder: 21. 9. 1999**  
**Offenlegungsstag: 31. 5. 2001**  
**Veröffentlichter Tag der Patenterteilung: 14. 8. 2003**

**Int. Cl.:**  
**H01L 27/15**  
**H01S 5/23**  
**H01L 25/62**  
**H01L 33/00**

**Innerhalb von 3 Monaten nach Veröffentlichung der Erteilung kann Einspruch erhoben werden**

**Patentschein:**  
OSRAM Opto Semiconductors GmbH, 83048 Regensburg, DE

**Verein:**  
Epping, Hermann & Fischer GbR, 80339 München

**Erfinder:**  
Wipplowitz, Torsten, Dk., 93049 Regensburg, DE;  
Huber, Wolfgang, Dz., 93049 Regensburg, DE

**Für die Beurteilung der Patentfähigkeit in Bezug  
gezogene Druckschriften:**  
DE 2430 673 A1  
EP 09 33 942 A2

**Leichtmetallendes Halbleiterbauelement hoher ESD-Festigkeit und Verfahren zu seiner Herstellung**

**Leichtmetallendes Halbleiterbauelement, ins  
besondere ein Halbleiterbauelement, aufgebaut aus  
einem Halbleiterabschnitt (10) und  
einem Schutzdiodenabschnitt (20), wobei eine erste Kontaktmetallisierung (12) auf der Substratoberfläche aufgebaut ist und eine  
zweite Kontaktmetallisierung (7) auf der Substratoberfläche gegenüberliegenden, Oberfläche des Halbleiterabschnitts (10) aufgebaut ist, wobei die Kontaktmetallisierungen (12, 7) an  
einem höheren Potential an einer pn-Übergang (3) ansetzen, wobei der Schutzdiodenabschnitt (20) einen  
widerstandsfähigen Schutzdiodenabschnitt (21) und einen  
Schutzdiodenabschnitt (22) enthaltend, wobei die Schutzdiodenabschritte (21, 22), wobei der Schutzdiodenabschnitt (22) darunter ausgebildet ist, wobei  
der Schutzdiodenabschnitt (22) eine höhere  
Flußspannung als der in demselben ansetzende  
gegenüberliegende Abschnitt (21) aufweist, wobei  
die Kontaktmetallisierungen (12, 7) an  
einem höheren Potential an den Kontaktmetallisierungen (10, 7) an  
der Basis der angesetzten Spannung, die höher als die  
Flußspannung des Schutzdiodenabschnitts (22) ist, einen  
geringeren elektrischen Widerstand als der leichtmetall-  
ende Abschnitt (10) aufweist,  
dadurch gekennzeichnet, dass  
der leichtmetallende Abschnitt (10) und der Schutzdiodenabschnitt (22)  
einander gegenüberliegend nebeneinander angeordnet sind,  
ein sich von der zweiten Kontaktmetallisierung (7) bis in  
eine bestimmte Tiefe des Basallements erstreckender, den  
leichtmetallenden Abschnitt (10) und den Schutzdioden-  
abschnitt (22) elektrisch voneinander isolierender Abschnitt (16) ausgebildet ist, und  
der leichtmetallende pn-Übergang (2a) ein Teil eines sich  
der leichtmetallenden Abschnitt (10) und den  
Schutzdiodenabschnitt (22) entstreichenden pn-Überganges (2) ist,  
der isolierende Abschnitt (16) sich bis vor den pn-Über-  
gang (2a) erstreckt, und  
der Schutzdiodenabschnitt (2b, 7) aus dem anderen Teil  
des pn-Überganges (2) und einer weiteren Diode gebildet  
ist.**

**DE 199 45 134 C2**

BUNDESDRUCKEREI 08.03.2003 203 330471/9

PAGE 1/2 \* RCVD AT 7/21/2005 12:17:07 AM [Eastern Daylight Time] \* E953UPTO-EPXRF-474 \* DNNB:2731000 \* CSD:3944800673 \* DURATION (mm:ss):06:54

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21-07-'05 12:32	WINSTON HSU, NO. 41526	8064986673	T-539 P10/16 U-502
DE 199 45 134 C 2			
<p>1 Beschreibung</p> <p>[0001] Die Erfindung betrifft ein Schutzmittelvornder Halbleiterbauelement nach dem Oberbegriff des Patentanspruchs 1 und ein Verfahren zu seiner Herstellung nach Patentanspruch 9.</p> <p>[0002] Ein derartiges Bauelement ist aus der DE 2-30 873 A1 bekannt. Bei dem bekannten Schutzmittelvornder Halbleiterbauelement handelt es sich um eine Leuchtdiode, die von einem pn-Übergang in einem Substrat geprägt ist. Nahauf der Leuchtdiode ist eine optische Schicht auf das Substrat aufgebracht. In der optischen Schicht ist eine weitere parallel zur Leuchtdiode geschaltete Schutzdiode ausgebildet, die bei Spannungen oberhalb des Arbeitsspektrums der Leuchtdiode einen größeren Leitfähigkeitsstrom aufweist und dadurch die Leuchtdiode vor Überspannungen in Richtung Leuchtdiode schützt.</p> <p>[0003] Ein Nachteil des bekannten Schutzmittelvornder Halbleiterbauelement ist, daß sein Aufbau eine aufwendige Herstellungspflege mit einer genauen Herstellung des Schutzdiodesabschluß und des Schutzmittelvornder Abschluß erfordert.</p> <p>[0004] Weiterhin sind Halbleiter-Laserdioden, insbesondere sogenannte Verstärker-Laserdioden (VCSELs) bekannt, die ein zunehmendes Interesse in der optischen Dateneinspeisung und -auspeisung finden. Den vielen positiven Eigenschaften von VCSELs steht jedoch der Nachteil gegenüber, daß diese Bauelemente eine relativ geringe Leistung gegen ESD (Electro-Static Discharge) Schäden aufweisen. Gerade für Anwendungen im kommerziellen und industriellen Bereich werden von den Kunden jedoch ESD-sichere Bauelemente gefordert, d. h. in der Regel müssen die Bauelemente eine ESD-Spannung von 2000 V unterschreiten können. Dabei wird das sogenannte Human-Body-Modell zugrundegelegt, bei dem eine verlorene Kapazität mit der entsprechenden Spannung aufgeladen wird und die Entladung der Kapazität über das zu testende Bauelement erfolgt.</p> <p>[0005] Die Bauelementeigenschaften dürfen sich unter der vorstehenden hohe Strom-Spannung-Pause nicht verändern. VCSELs sollten jedoch bei einer solchen ESD-Pentration im Idealen weniger 100 V Belastung in einem Schottdioden-Diode annehmen, dabei wesentlich kleinere ESD-Pentriktionen als in Richtung. Daher sind für die ESD-Pentriktion von VCSELs die Belastungen in Spezifikation unterschiedlich.</p> <p>[0006] Um Bauelemente mit geringen ESD-Pentriktionen zu vereinfachen müssen spezielle ESD-Schutzvorrichtungen gewählt werden, was in den meisten Anwendungsfällen von der Anwendungssicht her nicht sinnvoll ist. Messungen an VCSEL-Bauelementen mit unterschiedlichen Durchmesser haben gezeigt, daß die ESD-Pentriktion von VCSELs abhängt von der Größe der aktiven Fläche ist. Dabei zeigte sich, daß eine größere aktive Fläche auch eine größere ESD-Pentriktion bewirkt. Da aber die aktive Fläche von VCSELs nicht entscheidend anderes Bauelementeigenschaften, wie Schwellspannung, Widerstand, Strukturqualität, usw. beeinflußt, kann nicht einfach eine größere Bauelementfläche gewählt werden, um die ESD-Pentriktion zu verhindern. Diese Schwierigkeit tritt nicht nur bei VCSEL-Dioden sondern auch bei anderen lichtemittierenden Halbleiterbauelementen, wie halbleiterweise lichtemittierenden Laserdiode und LED's, auf.</p> <p>[0007] Aus der EP 0 933 842 A2 ist daher eine Anwendung mit einem VCSEL bekannt, in dem eine Schutzdiode eingesetzt ist. Sowohl die VCSEL als auch die Schutzdiode sind auf einem Substrat in einer Halbleiterbauelementzarge ausgebildet, wobei die Schutzdiode durch bis</p> <p>zwei Schottdioden reichende U-förmige U-förmige Schutzdiodeschaltung und lichtemittierende Abschluß sind bei der bekannten Anordnung über einem gemeinsamen Schottdiodenabschluß angeordnet.</p> <p>[0008] Ausgehend von diesem Stand der Technik liegt der Pfeilende die Aufgabe zugrunde, ein einfaches herstellbares Schutzmittelvornder Halbleiterbauelement hoher ESD-Widerstand und ein Verfahren zu seiner Herstellung anzugeben, wobei die übigen Bauelementeigenschaften nicht wesentlich beeinträchtigt werden sollen.</p> <p>[0009] Diese Aufgabe wird mit den kennzeichnenden Merkmalen des Patentanspruchs 1 gelöst.</p> <p>[0010] Demgegenüber beschreibt die Erfindung ein Schutzmittelvornder Halbleiterbauelement mit einer Halbleiteroberfläche und einer auf dem Halbleiteroberfläche aufgeschichteten Halbleiterbeschichtung, wobei die Halbleiterbeschichtung eine einen Schottdiodenabschluß pro-Übergang enthaltende lichtemittierende Abschluß und einen Schutzdiodesabschluß umschließt und den Schutzdiodesabschluß aufweist, die zusammenhängend und unabhängig voneinander angeordnet sind, eine erste Kontaktanordnung auf der Schottdiodenabschluß und eine zweite Kontaktanordnung auf der der Schutzdiodesabschluß gegenüberliegenden Oberseite des Halbleiterbeschichtungsschichtabschluß, wobei der Schutzdiodesabschluß damit ausgebildet ist, daß der Schutzdiodesabschluß eine höhere Pulsfrequenz und bei einer zwischen den Kontaktanordnungen gem. an den Bauelementen angelegten Spannung, die höher als die Flutspannung des Schutzdiodesabschluß ist, einen geringeren elektrischen Widerstand als der lichtemittierende Abschluß aufweist. Der lichtemittierende Abschluß und der Schutzdiodesabschluß der Halbleiterbeschichtung sind zusammenhängend gehalten und angeordnet, wobei es sich von der zweiten Kontaktanordnung bis vor den pro-Übergang des Bauelementes erreichender, der lichtemittierenden Abschluß und den Schutzdiodesabschluß elektrisch voneinander isolierende Abschluß ausgebildet ist, der lichtemittierende Abschluß und der Schutzdiodesabschluß erreichbar pro-Übergang ist, und der Schutzdiodesabschluß pro-Übergang ist, und der Schutzdiodesabschluß ist.</p> <p>[0011] Das Schutzdiodesabschluß des Schutzmittelvornder Bauelementes sind somit dem pro-Übergang des lichtemittierenden Abschluß parallel gehalten und weisen eine höhere Durchdringungs- oder Kontaktanordnung als der pro-Übergang auf. Im normalen Arbeitsbetrieb des Halbleiterbauelementes fließt praktisch der gesamte Strom über den lichtemittierenden Abschluß, da er den lichtemittierenden Abschluß und die Schutzdiodesabschluß parallel angelegte Spannung unterhalb der Durchbruchspannung des Schutzdiodes liegt. Während also bei normaler Betrieb praktisch kein Strom über die parallel geschalteten Schutzdioden fließt, bewirkt eine hohe Spannung während einer ESD-Belastung eine Durchschaltung der Schutzdioden. Aufgrund des dem sehr niedrigen elektrischen Widerstand des Schutzdiodesabschluß gegenüber dem lichtemittierenden Abschluß liegt der überwiegende Teil des ESD-Belastungsstromes über die parallelen Schutzdioden. Dadurch wird der eigentliche lichtemittierende Halbleiterbauelement geschützt.</p> <p>[0012] Insbesondere ist vorgesehen, daß die Kontaktanordnung überwiegend oberhalb des Schottdiodenabschluß oder Durchdringungsabschluß der Schutzdioden angeordnet ist.</p> <p>[0013] Weiterhin ist vorgesehen, daß der pro-Übergang über die Kontaktanordnung des Halbleiterbauelementes entweder ein oder zwei Schottdioden in dem im Schutzdiodesabschluß befindlichen Abschluß des pro-Übergangs gebildet ist. Die zweiten Diode ist dabei vorwiegend durch einen Schottdioden-Kontakt zwischen dem zweiten elektrischen</p>			

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22-07-05 12:05	From: WINSTON HSU, NO. 41526	8064986673	T-599	P01/16	U-546
<p><b>NAIPO</b></p> <p><b>North America Intellectual Property Corporation</b></p> <p>P.O. BOX 506, Merrifield, VA 22116, U.S.A. Voice Mail: 302-729-1562 FAX: 806-498-6673 e-mail: <a href="mailto:winstonhsu@naipo.com">winstonhsu@naipo.com</a> Customer No.: 27765</p> <p><b>Fax To:</b> PHAM, LONG      <b>Tel.:</b> (571) 272-1714 <b>Art Unit:</b> 2814      <b>Fax:</b> (703) 872-9306</p> <p><b>From:</b> Winston Hsu, Registration No. 41,526 <b>Serial No.:</b> 10/791,709 <b>Attorney Docket No.:</b> UECP0012USA <b>Subject:</b> Information Disclosure Statement (IDS) <b>Total Pages:</b> 16 pages (including cover page)</p> <p><b>Winston Hsu 07/21/2005</b></p> <p><b>RESUBMIT</b> Information Disclosure Statement (IDS)</p> <p>Dear Sir,</p> <p>The applicant submitted this Information Disclosure Statement on 07/21/2005 in US eastern time 00:05 AM via fax number 571-273-8300. However, the submission was either failed or incomplete, the applicant hereby submits the Information Disclosure Statement again via fax number 703-872-9306. Please ignore the previous submission, and take the current submission as substitute.</p> <p>UECP0012USA0_D1_1</p>					

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22-07-05 12:15 2E WINSTON HSU, NO. 41526 8064986673		T-600 P03/16 U-546																																																																																																		
<p>PTO/SB/21 (09-04) Approved for use through 07/31/2004 GPO: 2004-173 U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE</p> <table border="1"><tr><td colspan="2">TRANSMITTAL FORM</td><td colspan="2">Application Number 10/791,709</td></tr><tr><td colspan="2">(To be used for all correspondence after issue filing)</td><td colspan="2">Filing Date 03/04/2004</td></tr><tr><td colspan="2"></td><td colspan="2">First Named Inventor Jen-Chau Wu</td></tr><tr><td colspan="2"></td><td colspan="2">Art Unit 2814</td></tr><tr><td colspan="2"></td><td colspan="2">Examiner Name PHAM, LONG</td></tr><tr><td colspan="2">Total Number of Pages in This Submission 14</td><td colspan="2">Attorney Docket Number UECP0012USA</td></tr><tr><td colspan="4"><p>ENCLOSURES (Check all that apply)</p><table border="1"><tr><td><input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached</td><td><input type="checkbox"/> Drawings <input type="checkbox"/> Licensing-related Papers</td><td><input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appear Communication to Board of Appeals and Interferences</td></tr><tr><td><input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavit(s)/Declaration(s)</td><td><input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application</td><td><input type="checkbox"/> Appear Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information</td></tr><tr><td><input type="checkbox"/> Extension of Time Request</td><td><input type="checkbox"/> Power of Attorney, Revocation</td><td><input type="checkbox"/> Status Letter</td></tr><tr><td><input type="checkbox"/> Express Abandonment Request</td><td><input type="checkbox"/> Change of Correspondence Address</td><td><input type="checkbox"/> Other Enclosure(s) (please identify below)</td></tr><tr><td><input type="checkbox"/> Information Disclosure Statement</td><td><input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund</td><td></td></tr><tr><td><input type="checkbox"/> Certified Copy of Priority Document(s)</td><td><input type="checkbox"/> CD, Number of CD(s) _____</td><td></td></tr><tr><td><input type="checkbox"/> Reply to Missing Parts <input type="checkbox"/> Incorporate by Reference <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.63</td><td><input type="checkbox"/> Landscape Table on CD</td><td></td></tr></table></td></tr><tr><td colspan="4">Remarks:</td></tr><tr><td colspan="4">SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT</td></tr><tr><td>First Name</td><td colspan="3">North America Intellectual Property Corporation</td></tr><tr><td>Signature</td><td colspan="3">Winston Hsu</td></tr><tr><td>Printed name</td><td colspan="3">Winston Hsu</td></tr><tr><td>Date</td><td>07/21/2005</td><td>Reg. No.</td><td>41,526</td></tr><tr><td colspan="4">CERTIFICATE OF TRANSMISSION/MAILING</td></tr><tr><td colspan="4">I hereby certify that the correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.</td></tr><tr><td>Signature</td><td colspan="3"></td></tr><tr><td>Typed or printed name</td><td colspan="3">Date</td></tr><tr><td colspan="4">This certificate of transmission is required by 37 CFR 1.6. The information is required to obtain or retain a benefit by the party to the file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This certificate is estimated to 2 hours to complete, including the time to read the instructions and the time to type or sign. The time will vary depending upon individual case. 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Box 1450, Alexandria, VA 22313-1450.</td></tr><tr><td colspan="4">If you need assistance in completing the form, call 1-800-PTO-8199 and select option 2.</td></tr></table>				TRANSMITTAL FORM		Application Number 10/791,709		(To be used for all correspondence after issue filing)		Filing Date 03/04/2004				First Named Inventor Jen-Chau Wu				Art Unit 2814				Examiner Name PHAM, LONG		Total Number of Pages in This Submission 14		Attorney Docket Number UECP0012USA		<p>ENCLOSURES (Check all that apply)</p> <table border="1"><tr><td><input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached</td><td><input type="checkbox"/> Drawings <input type="checkbox"/> Licensing-related Papers</td><td><input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appear Communication to Board of Appeals and Interferences</td></tr><tr><td><input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavit(s)/Declaration(s)</td><td><input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application</td><td><input type="checkbox"/> Appear Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information</td></tr><tr><td><input type="checkbox"/> Extension of Time Request</td><td><input type="checkbox"/> Power of Attorney, Revocation</td><td><input type="checkbox"/> Status Letter</td></tr><tr><td><input type="checkbox"/> Express Abandonment Request</td><td><input type="checkbox"/> Change of Correspondence Address</td><td><input type="checkbox"/> Other Enclosure(s) (please identify below)</td></tr><tr><td><input type="checkbox"/> Information Disclosure Statement</td><td><input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund</td><td></td></tr><tr><td><input type="checkbox"/> Certified Copy of Priority Document(s)</td><td><input type="checkbox"/> CD, Number of CD(s) _____</td><td></td></tr><tr><td><input type="checkbox"/> Reply to Missing Parts <input type="checkbox"/> Incorporate by Reference <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.63</td><td><input type="checkbox"/> Landscape Table on CD</td><td></td></tr></table>				<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached	<input type="checkbox"/> Drawings <input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appear Communication to Board of Appeals and Interferences	<input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavit(s)/Declaration(s)	<input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Appear Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information	<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter	<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Change of Correspondence Address	<input type="checkbox"/> Other Enclosure(s) (please identify below)	<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund		<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____		<input type="checkbox"/> Reply to Missing Parts <input type="checkbox"/> Incorporate by Reference <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.63	<input type="checkbox"/> Landscape Table on CD		Remarks:				SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT				First Name	North America Intellectual Property Corporation			Signature	Winston Hsu			Printed name	Winston Hsu			Date	07/21/2005	Reg. No.	41,526	CERTIFICATE OF TRANSMISSION/MAILING				I hereby certify that the correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.				Signature				Typed or printed name	Date			This certificate of transmission is required by 37 CFR 1.6. The information is required to obtain or retain a benefit by the party to the file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This certificate is estimated to 2 hours to complete, including the time to read the instructions and the time to type or sign. The time will vary depending upon individual case. 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Effective on 12/08/2004.  
Fees pursuant to the Consolidated Appropriations Act, 2008 (H.R. 4878).

**FEE TRANSMITTAL  
For FY 2005**

Applicant claims small entity status. See 37 CFR 1.27

**TOTAL AMOUNT OF PAYMENT (\$)** 180.00

**METHOD OF PAYMENT (check all that apply)**

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 Deposit Account Deposit Account Number: 50-3106 Deposit Account Name: North America Intellectual Property Corp  
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**FEES CALCULATION**

1. BASIC FILING, SEARCH, AND EXAMINATION FEES						
Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES	
	Small Entity Fee (\$)	Large Entity Fee (\$)	Small Entity Fee (\$)	Large Entity Fee (\$)	Small Entity Fee (\$)	Large Entity Fee (\$)
Utility	300	150	500	250	200	100
Design	200	100	100	50	130	65
Plant	200	100	300	150	160	80
Reissue	300	150	500	250	600	300
Provisional	200	100	0	0	0	0

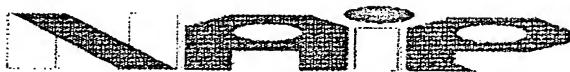
Page 1 of 1. Received at 7/22/2005 12:16:12 AM (Eastern Daylight Time) 14 VLR/3210-240747-01 \* DSC1372004 \* CSD 8064986673 \* DURATION (min:sec) 01:20

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時間 :22-07-05 12:21  
電話號碼1 :8064986673  
名稱 :WINSTON HSU, NO. 41526

檔案號碼 : 546  
日期 : 22.07 12:05  
至 : 00217038729306  
原稿頁數 : 16  
啓始時間 : 22.07 12:05  
結束時間 : 22.07 12:21 (回復時間 : 22.07 13:21 )  
傳送頁數 : 3  
狀態 : NG DO

傳送原稿



**North America  
Intellectual Property Corporation**

P.O. BOX 506, Merrifield, VA 22116, U.S.A.

Voice Mail: 302-729-1562

FAX: 806-498-6673

e-mail: winstonhsu@naipo.com

Customer No.: 27765

**Fax To: PHAM, LONG  
Art Unit: 2814**

**Tel.: (571) 272-1714  
Fax: (703) 872-9306**

**From : Winston Hsu, Registration No. 41,526**

**Serial No.: 10/791,709**

**Attorney Docket No.: UECP0012USA**

**Subject: Information Disclosure Statement (IDS)**

**Total Pages: 16 pages (including cover page)**

Winston Hsu 07/21/2005

**RESUBMIT**

Information Disclosure Statement (IDS)

Dear Sir,

The applicant submitted this Information Disclosure Statement on 07/21/2005 in US eastern time 00:05 AM via fax number 571-273-8300. However, the submission was either failed or incomplete, the applicant hereby submits the Information Disclosure Statement again via fax number 703-872-9306. Please ignore the previous submission, and take the current submission as substitute.

UECP0012USA01.DOC

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時間 :21-07-05 12:42  
電話號碼1 :8064986673  
名稱 :WINSTON HSU, NO. 41526

檔案號碼 : 502  
日期 : 21.07 12:05  
至 : 200215712738300  
原稿頁數 : 16  
啓始時間 : 21.07 12:06  
結束時間 : 21.07 12:42 (回復時間 : 21.07 13:42 )  
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狀態 : NG DO

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**Art Unit: 2814**

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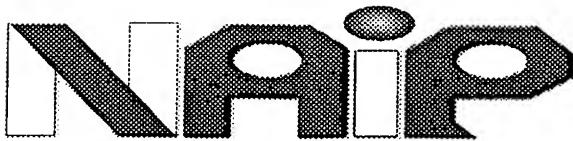
**Attorney Docket No.: UECPO0012USA**

**Subject: Information Disclosure Statement (IDS)**

**Total Pages: 16 pages (including cover page)**

**Winston Hsu 2005/07/20**

**UECPO0012USA001001**



**North America  
Intellectual Property Corporation**

**P.O. BOX 506, Merrifield, VA 22116, U.S.A.**

**Voice Mail: 302-729-1562**

**FAX: 806-498-6673**

**e-mail: [winstonhsu@naipo.com](mailto:winstonhsu@naipo.com)**

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**UECP0012USA0\_D1\_1**



PTO/SB/97 (09-04)

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Application No: 10/791,709

(1) Transmittal Form	1 PAGE
(2) Fee Transmittal	1 PAGE
(3) Information Disclosure Statement	12 PAGES

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ENCLOSURES (Check all that apply)		
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<input type="checkbox"/> Remarks		

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	North America Intellectual Property Corporation		
Signature	<i>Winston Hsu</i>		
Printed name	Winston Hsu		
Date	07/21/2005	Reg. No.	41,526

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Typed or printed name		Date

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Effective on 12/08/2004.

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

## FEE TRANSMITTAL For FY 2005

Applicant claims small entity status. See 37 CFR 1.27

**TOTAL AMOUNT OF PAYMENT** (\$ ) 180.00

### Complete if Known

Application Number	10/791,709
Filing Date	03/04/2004
First Named Inventor	Jen-Chau Wu
Examiner Name	PHAM, LONG
Art Unit	2814
Attorney Docket No.	UECP0012USA

### METHOD OF PAYMENT (check all that apply)

Check  Credit Card  Money Order  None  Other (please identify): \_\_\_\_\_

Deposit Account Deposit Account Number: **50-3105** Deposit Account Name: North America Intellectual Property Corp.

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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### FEE CALCULATION

#### 1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES	
	Fee (\$)	Small Entity	Fee (\$)	Small Entity	Fee (\$)	Small Entity
Utility	300	150	500	250	200	100
Design	200	100	100	50	130	65
Plant	200	100	300	150	160	80
Reissue	300	150	500	250	600	300
Provisional	200	100	0	0	0	0

#### 2. EXCESS CLAIM FEES

##### Fee Description

Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent

Fee (\$)	Small Entity
50	25
200	100
360	180

Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent

Multiple dependent claims

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	
				Fee (\$)	Fee Paid (\$)
- 20 or HP =	x	=			
HP = highest number of total claims paid for, if greater than 20					

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	
				Fee (\$)	Fee Paid (\$)
- 3 or HP =	x	=			
HP = highest number of independent claims paid for, if greater than 3					

#### 3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
- 100 =	/ 50 =	(round up to a whole number) x	=	

#### 4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: submission of Information Disclosure Statement 18 0.00

### SUBMITTED BY

Signature	<i>Winston Hsu</i>	Registration No. 41,526 (Attorney/Agent)	Telephone 302-729-1562
Name (Print/Type)	Winston Hsu		Date 07/21/2005

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Wu, Jen-chau et al.

5 Appl. No.: 10/791,709 Filing Date: 03/04/2004

Examiner: PHAM, LONG Art Unit: 2814

Docket No.: UECP0012USA

Title: ESD PROTECTION CONFIGURATION AND METHOD  
10 FOR LIGHT EMITTING DIODES

To: Commissioner for Patents

P.O. BOX 1450

Alexandria, VA 22313-1450

15

Subject: Information disclosure statement under 37 CFR §1.56

Dear Sir,

20

This is an Information Disclosure Statement in accordance with the duty to disclose information material to patentability under 37 CFR §1.56. The applicant wishes to make of record the document(s) listed on the accompanying form PTO/SB/08.

25

Since this IDS is filed after the mailing date of the first Office action but before notice of allowance, consideration of the information disclosure statement is hereby requested according to 37 CFR §1.97(c). That each item of information contained in the information disclosure statement was first cited in an Office communication mailed on 01/14/2005 for the counterpart German patent application number 10 2004 014 864.3, which are more than three months from the filing of the

information disclosure statement. Accordingly, the fee of submission of an information disclosure statement set forth in § 1.17(p) is enclosed to fulfill § 1.97 requirement.

5 According to the requirement set forth in 37 C.F.R. § 1.98 and M.P.E.P. 609, the applicants are submitting a copy of the cited reference (German Patent DE 19945134C2) and an English language abstract of the cited German patent. The English language title and abstract of DE 19945134C2 are listed as follows:

10

Title:

LIGHT EMITTING SEMI-CONDUCTING COMPONENT WITH HIGH ESD RIGIDITY AND METHOD FOR PRODUCTION OF SAID COMPONENT

15

Abstract:

The invention relates to a light-emitting semi-conducting component of a light-emitting segment (10), especially a VCSEL-semi-conducting laser diode and a protective diode segment (20) connected in parallel. Said protective diode (3b, 71) is a series circuit of a Schottky-contact (71) and a part of a (3b) pn-junction (3). At larger ESD-voltage loads, the protective diode (3b, 71) is triggered, so that a majority of said electrical current flows through said protective diode (3b, 71) and said laser diode is thereby protected.

25

It is respectfully requested that the examiner can consider the document(s) listed on the accompanying form PTO/SB/08 and that it be made of record in the application. The applicants sincerely hope that the examiner initials the cited reference(s) on the form and that a copy 30 of the initialed form be sent to the applicants with the next communication from the examiner.

Respectfully submitted,

Winston Hsu

Date: July 21, 2005

Winston Hsu, Patent Agent No. 41,526

5 P.O. BOX 506, Merrifield, VA 22116, U.S.A.

Voice Mail: 302-729-1562

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e-mail : [winstonhsu@naipo.com](mailto:winstonhsu@naipo.com)

10 Note: Please leave a message in my voice mail if you need to talk to me. The time in D.C. is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.



PTO/SB/08A (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**Substitute for form 1449/PTO**

## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

**(Use as many sheets as necessary)**

Sheet 1 of 1

<i>Complete if Known</i>	
Application Number	10/791,709
Filing Date	03/04/2004
First Named Inventor	Jen-Chau Wu
Art Unit	2814
Examiner Name	PHAM, LONG
Attorney Docket Number	UECP0012USA

**U. S. PATENT DOCUMENTS**

## FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
	1	DE 199 45 134 C 2	08-14-2003	OSRAM Opto Semiconductors GmbH	all	+

Examiner Signature		Date Considered	
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**\*EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3.) <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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